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EXAMINER

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ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Specification

1. The previously made objections to the Abstract and Title of the invention are hereby withdrawn in view of Applicants' amendments submitted on May 6, 2008.

Claim Objections

2. The previously made objection to the claim 12 is hereby withdrawn in view of Applicants' amendments submitted on May 6, 2008.

Claim Rejections - 35 USC § 112

3. The previously made rejection of claim 14 is hereby withdrawn in view of Applicants' amendments submitted on May 6, 2008.
4. The previously made rejection of amended claim 17 is reaffirmed for the reasons below:
5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3746

6. Amended Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The phrase "besides a surface of the drive shaft" suggests that the surface of the drive shaft is being excluded when specifying the position of the inlet passage. It is suggested that the phrase "c" be used instead. In addition "drive shaft coupling" suggests a coupling member part associated with the drive shaft. It is suggested that the phrase "drive shaft that is coupled" be used instead. The suggestion for the combined phrase is: " beside a surface of the drive shaft that is coupled with the swash plate".

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12 - 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al (US Patent 5183394 A) and in view of Yokomachi et al (US PG Pub 20010007635 A1).

Fig. 1

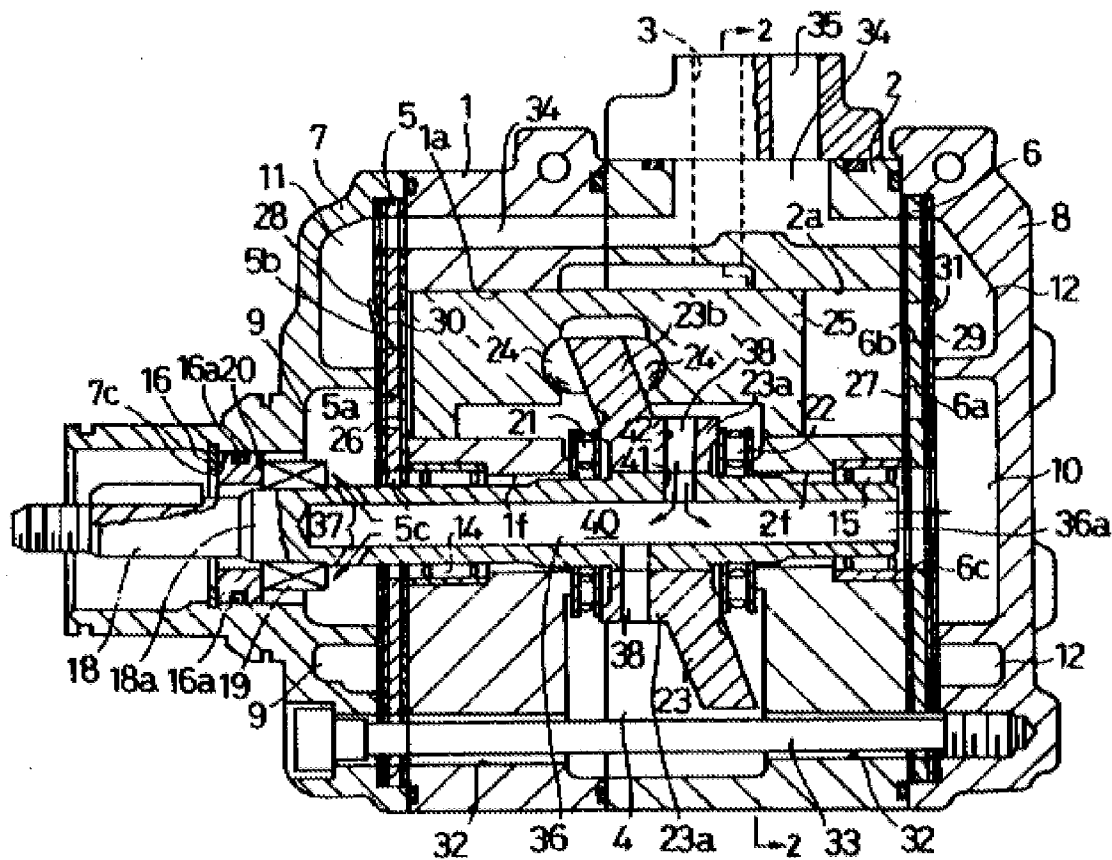


Fig. 2

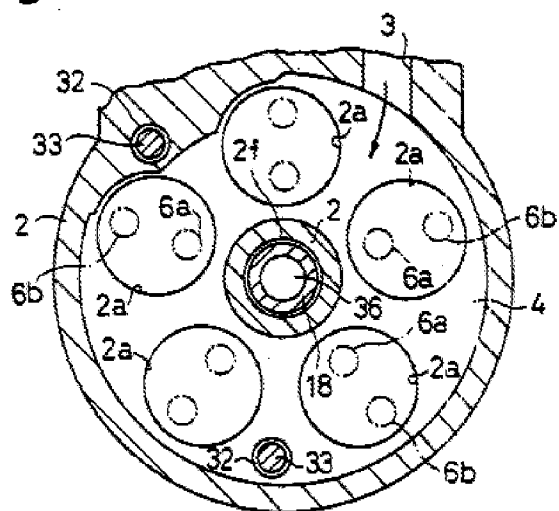
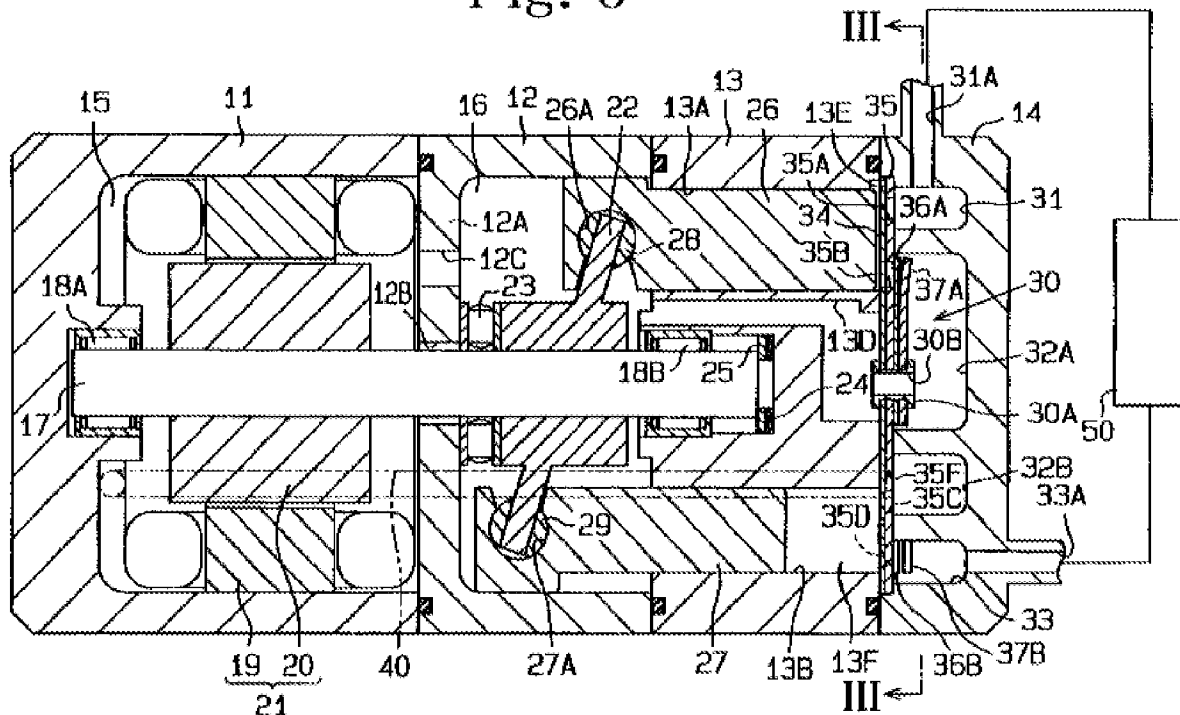


Fig. 5



3. In Re claim 12, with reference to figures 1 and 2, Fujii et al discloses a compressor installed to one side of driving means (not depicted) that provide drive to shaft (18), the compressor unit comprises:
- a front housing (7) having discharge chamber (11)
 - a rear housing (8) having a suction chamber (10) inherently partitioned from a discharge chamber (12), with a discharge port (35) formed at one side communicating through discharge passage (34) with the discharge chamber (12)
 - a cylinder block (1), (2) coupled between the front housing (7) and the rear housing (8) and having a plurality of bores (1a), (2a) formed at both sides (1a) and (2a) of the swash plate chamber that is inherently formed within cylinder blocks (1), (2) and a refrigeration suction port (3) formed at one side thereof

Art Unit: 3746

- a swash plate (23) placed in the swash plate chamber and coupled with drive shaft (18), and a plurality of double head pistons (25) (Column 3, Line 25) for reciprocating within the bores (1a), (2a) in cooperation with the rotation of the swash plate (23)
- feeding passage (38), (40), and (36a) for feeding refrigerant from the swash plate chamber partially into the suction chamber of the rear housing (10). With regards to the amendment “..passage for feeding refrigerant..”, this limitation no longer invokes 35 USC 112 6th paragraph (that was invoked prior to the amendment).

4. However, Fujii et al does not disclose:

- a motor unit comprising an electric motor installed in an inside motor room for rotating a drive shaft
- feeding means for feeding the refrigerant from the swash plate chamber partially into the motor room
- the front housing further has suction passages for communicating the motor room to the bores to allow the suction of refrigerant supplied to the motor room into the bores of the cylinder block

5. Nevertheless, with reference to Figure 5, Yokomachi et al discloses a motor driven compressor unit comprising:

- a motor unit (11) comprising an electric motor (21) installed in an inside motor room (15) for rotating a drive shaft (17)
- a compressor unit installed to the right of motor unit (11) as depicted, the compressor unit comprising:

Art Unit: 3746

- a front housing (12)
- a rear housing (14) having chamber (32B) inherently partitioned from a discharge chamber (33), with a discharge port (33A) formed at one side communicating with the discharge chamber (33)
- a cylinder block (13) coupled between the front housing (12) and the rear housing (14) and having a plurality of bores (13A), (13B) formed at both sides (13A) and (13B) of the swash plate chamber (16) and a refrigeration suction port (31A) formed at one side thereof
- a swash plate (22) placed in the swash plate chamber (16) and coupled with drive shaft (17), and a plurality of double head pistons (26), (27) for reciprocating within the bores (13A), (13B) in cooperation with the rotation of the swash plate (22)
- feeding means comprising communication bore (12C) and central bore (12B) for feeding refrigerant from the swash plate chamber (16) partially into the motor room (15). With regards to “..means for feeding refrigerant..”, this limitation meets the three prong test per MPEP 2181 and thereby invokes 35 USC 112 6th paragraph. The means for feeding refrigerant has been disclosed in Figure 5 of applicant's drawings.
- the front housing (12) further has a suction passage (40) for communicating the motor room (15) to the bore (13B) through intermediate pressure chamber (32B) to allow the suction of refrigerant supplied to the motor room (15) into the bore (13B). In addition, there is another suction passage communicating the bore (13A) to the motor room (15) originating at the bore (13A), through chamber (30), hole

Art Unit: 3746

(30B), communication bore (13D) and communication bore (12C) in the front housing (12) leading into the motor room (15).

6. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the compressor taught by Fujii et al to include a motor unit in a motor room on one side, feeding means for feeding the refrigerant from the swash plate chamber into the motor room and suction passages communicating the motor room to the bores as taught by Yokomachi et al for the purpose of producing a compact, reduced weight swash plate compressor which can efficiently cool down a motor chamber as stated by Yokomachi et al in the abstract.

7. In Re claim 13, Yokomachi et al discloses the feeding passages to include first low pressure passages (12B),(12C) communicating the swash plate chamber (16) to the motor room (15) and a second low pressure passage (30B),(13D) for communicating the swash plate chamber (16) to the suction chamber (30). Fujii et al also discloses a second low pressure passage (38), (40), and (36a) for feeding refrigerant from the swash plate chamber partially into the suction chamber of the rear housing (10).

8. In Re claim 14, Yokomachi et al discloses the first low pressure passages (12B),(12C) are formed through the front housing and inherently through the front side of cylinder block chamber (13). Yokomachi et al also discloses a second low pressure passage (30B),(13D) inherently formed through the rear side of cylinder block chamber

Art Unit: 3746

(13). Fujii et al also discloses a second low pressure passage (38), (40), and (36a) formed through the rear cylinder block chamber (2).

9. In Re claim 15, Fujii et al discloses a passage (40) formed in the drive shaft (18), and inlet passages (38) communicating the swash plate chamber to the passage (40), to allow the flow of refrigerant from the swash plate chamber towards the passage (40).

10. In Re claims 16 and 17, Fujii et al discloses that the inlet passages (38), (40) are formed inside the drive shaft (18) and the hub (23a) and, the inlet passage (42) in the hub (23a) is coupled with the inlet passage (41) in the drive shaft (18).

11. In Re claim 18, Fujii et al discloses the discharge chamber (11) of the front housing (7) is communicated with the discharge chamber (12) of the rear housing (8) via a communication passageway (34) formed through the cylinder blocks (1) and (2).

12. In Re claim 19, the front housing (7) further has a suction chamber (9) inherently partitioned from the discharge chamber (11).

13. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al (US Patent 5183394 A) and Yokomachi et al (US PG Pub 20010007635 A1) as applied to claim 12 and further in view of Saito et al (US PG Pub 20020039532 A1).

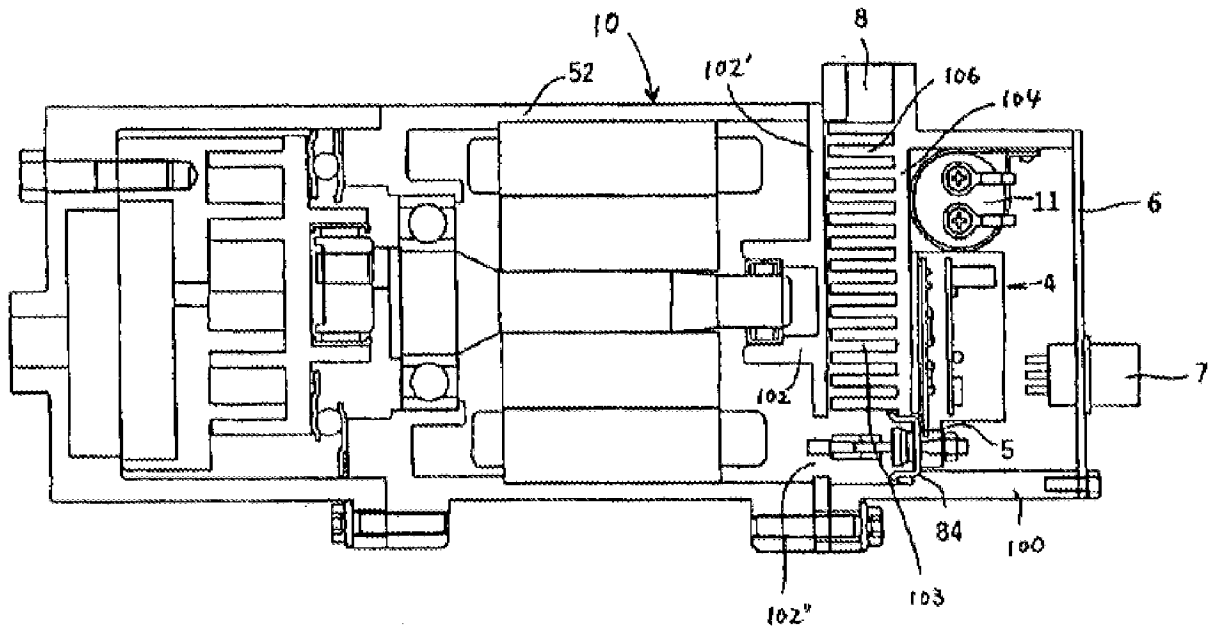


Fig. 4

14. In Re claim 20, Fujii et al modified by Yokomachi et al as applied to claim 12 discloses the claimed limitations except for the suction muffler chamber formed at one side of the cylinder block, the suction muffler chamber is mounted with motor-controlling means on an upstream section where refrigerant is introduced.

15. However, with reference to Figure 4 depicted above, Saito et al discloses a suction muffler chamber (100) formed at one side of cylinder block (52), the suction muffler chamber (100) is mounted with motor controlling means (4) on an upstream section (103) where refrigerant is introduced through inlet port (8).

16. It would have been obvious to a person having ordinary skill in the art at the time of the invention to further modify the compressor unit disclosed by Fujii et al modified by Yokomachi et al at the inlet to include a suction muffler chamber and motor controlling

means as taught by Saito et al for the purpose of reducing the cost of manufacturing because additional cooling means to dissipate the heat generated by motor controlling means is no longer necessary as stated by Saito et al in the section "Description of related art" in Paragraph [0004].

17. In Re claim 21, Saito et al discloses the motor controlling means (4) comprises an inverter (2) as mentioned in Paragraph [0033].

Response to Arguments

8. Applicant has argued that Fujii and Yokomachi (D2) shows a low cooling efficiency in the crank chamber and motor room because after the refrigerant in the lower temperature and lower pressure of the intake port 31A flows into the cylinder bore, the refrigerant is first compressed and then supplied into the motor room and the crank chamber at a higher temperature.

9. The examiner respectfully disagrees with applicant's argument because Yokomachi et al discloses an embodiment in Paragraph [0084] where suction refrigerant is introduced into the motor chamber and crank chamber before it is compressed: "The suction refrigerant is introduced into the motor chamber 15 and the crank chamber 16 before it is compressed. That is, the refrigerant in low temperature is used before the temperature rises by the compressive action. Accordingly, the motor chamber 15 and the crank chamber 16 are effectively cooled down ".

10. Applicant has argued that “unlike the prior single head swash plate type motor driven compressor”, due to the compression at front and rear sections, the compressor according to the invention can have various advantages.

11. The examiner respectfully disagrees with the applicant’s argument because the prior art Fujii et al discloses a double head swash plate type compressor with compression chambers at the front end (11) and at the rear end (12) therefore there is compression in the front and rear sections.

12. In view of the above, applicants' arguments have been considered carefully but are not persuasive and therefore the application is not in condition for allowance.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

DGK